

App. No. 10/708,663
Amendment dated September 30, 2005
Reply to Office action of June 30, 2005

REMARKS

Summary of Amendments

Claims 1, 7 and 15 have been amended. The amendments to claims 1 and 15 other than for editorial clarity add, commonly to both, a limitation from claim 7—namely, electrodes as additional elements of the claimed susceptor. Accordingly, claim 7 has been amended to delete the recitation of the electrodes themselves, leaving the recitation of the limitation on the electrode location.

Since the amendments, other than the editorial changes at initiative on Applicants' behalf, derive solely from the subject matter of claim 7, it is believed that no new search is required.

Rejections under 35 U.S.C. § 102

Claims 1-5, 8-10 and 13-15: Ito WO 717 (EP '919)

Claims 1-5, 8-10 and 13-15 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Int'l. Pat. App. Pub. No. WO 02/084717 to Ito, which has an English counterpart, EP Pat. App. Pub. No. 1 391 919.

Under this section the Office action states that Ito shows a ceramic susceptor formed of 1) a laminate of ceramic sheets, 2) a concentric circular resistive heating element formed on one surface of the laminate, 3) a lead circuit formed on another surface, such that the lead circuit and heating element are formed on different surfaces, with 4) an electrical junction between the resistive heating element and the lead circuit.

It is noted that claim 7 has not been rejected under this section. Claims 1 and 15 have been amended to add, commonly to both, the claim 7 limitation of electrodes as additional elements of the claimed susceptor laminate. Namely, claims 1 and 15 now each recite

electrodes for supplying electric power from outside the susceptor, said electrodes connected to said lead circuit and formed inside the area in which the resistive heating element is formed.

The entire thrust of the Ito reference is directed to a susceptor configuration that features a "convex portion" (or more precisely, a projection) in which conductor circuits and power-supplying terminals for the resistive heating element(s) are contained. The Ito configuration is an alternative to the typical prior-art configuration,

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illustrated in Fig. 11 of Ito, in which a conductor circuit 58 is connected to external terminals 63, in turn connected to conductive wires 630, that are housed in a protective cylindrical body 57. The conductor circuit 58 is beneath resistive heating element 52, to which the conductor circuit is connected through via holes 530 and a conductor-filled through-hole 53.

The goal with the Ito configuration is basically to put the "conductor circuits" 18 and external terminals 23, for supplying power to the resistive-heating-element circuits 12, into the projection, which sticks out sideways from the susceptor. In other words, the Ito configuration takes components that had been provided housed in a tube in the center of the bottom of the susceptor, and puts those components in a sideways projection that is an integral part of the susceptor.

Applicants respectfully submit that claims 1 and 15 as amended are not anticipated by the Ito reference, and that in turn claims 2-5, 8-10, and 13 and 14, as depending directly or indirectly from claim 1, no longer stand rejected based on the Ito reference. (Applicants' assertion is not acquiescence to the allegation that the temperature uniformity set forth in claim 5 of the present application is "inherently met by Ito.")

Rejections under 35 U.S.C. § 103

Claims 1-5 and 8-15; Burkhart et al. '283 in view of Ito WO 717 or Kawanabe et al. '557

Claims 1-5 and 8-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Pat. No. 6,469,283 to Burkhart et al. in view of the Ito reference, or U.S. Pat. No. 6,133,557 to Kawanabe et al. (Apart from the Ito reference, each of these references was cited in the previous Office action.)

In essence, this rejection repeats the § 102 rejection made over Burkhart et al. in the previous action on the merits, but now combines the Burkhart et al. reference with either Ito or Kawanabe et al., in a nod to Applicants' claim 1 amendments—also incorporated into new claim 15—in response, setting forth that the

ceramic susceptor is formed as a laminate having a frontside . . . and a backside, the laminate composed of a plurality of ceramic sheets whose sides other than the laminate frontside and backside define susceptor internal surfaces.

Again, it is noted that claim 7 has not been rejected under this section. Claims 1 and 15 have been amended to add, commonly to both, the claim 7 limitation of

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electrodes as additional elements of the claimed susceptor laminate. Namely, claims 1 and 15 now each recite

electrodes for supplying electric power from outside the susceptor, said electrodes connected to said lead circuit and formed inside the area in which the resistive heating element is formed.

Applicants respectfully submit that claims 1 and 15 as amended are thus not obvious over the Burkhardt et al. reference in view of either the Ito or Kawanabe et al. references.

Claim 6: Burkhardt et al. '283 in view of in view of Ito WO '717 or Kawanabe et al. '557, and further in view of Kojima et al. '056 or Nozaki et al. '681

Claim 6 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Burkhardt et al. in view of Ito Kawanabe et al. as applied under this section to claims 1-5 and 8-15, and further in view of U.S. Patent No. 4,733,056 to Kojima et al. or U.S. Patent No. 5,264,681 to Nozaki et al. (Each of these latter two references was cited in the previous Office action.)

Applicants assert that for the reasons set forth above, claims 1 and 15 as amended are not obvious over the Burkhardt et al. reference in view of either the Ito or Kawanabe et al. references, and that because claim 6 depends directly from claim 1, whether this claim is obvious over the base references in further combination with Kojima et al. or Nozaki et al. is moot.

Claim 7: Burkhardt et al. '283 in view of in view of Ito WO '717 or Kawanabe et al. '557, and further in view of Kojima et al. '056 or Nozaki et al. '681

Claim 7 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Burkhardt et al. in view of Ito Kawanabe et al. as applied under this section to claims 1-5 and 8-15, and further in view of U.S. Patent No. 6,376,811 to Yamaguchi et al. or U.S. Patent No. 5,231,690 to Soma et al. (Each of these latter two references was cited in the previous Office action.)

As described in the middle of column 3 of the reference, Yamaguchi et al. illustrates load wires 8, 9 that feed into "current-introducing terminals" 5, 6 of a heating apparatus 1. Contrary to what is alleged in the Office action, the Yamaguchi et al. device does not include a lead circuit, let alone a lead circuit in the manner of the present invention. Rather than a lead circuit in combination with a resistive heating element, what Yamaguchi et al. teach are two separate resistive heating elements 3 and 4, lying in separate planes within the device.

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As acknowledged in Applicants' previous reply, Soma et al. do show lead wires 8, 8 (19 in other embodiments) "at a center and a peripheral portion of the substrate 6 of a wafer heater 1" (column 5, lines 3-4). Nevertheless, such lead wires in now way can be construed to be a lead circuit in the manner of the present invention.

Under this section the Office action goes on to state,

[I]t would have been obvious to one of ordinary skill in the art to adapt Burkhart, as modified by Ito and Kawanabe, to from the electrodes in the center of the susceptor to route the lead circuits and corresponding electrodes as an alternative arrangement to conveniently make the electrical power connection to the heating elements.

Nevertheless, the inspiration behind Applicants' novel combination of features in a ceramic susceptor as presently claimed is completely different, and as such led to a device that distinguishes any combination of the teachings of the cited references alleged under this section or any of the other of the sections in which the current rejections under § 103 have been made. As noted in paragraphs [0022] and [0023] of the present specification,

Thus forming the resistive-heating-element circuit and the lead circuit on a plurality of separate surfaces allows the resistive-heating-element circuit pattern to be defined irrespective of the position of the electrodes connected to the lead circuit for supplying electricity from without, therefore enabling uniformization of the temperature distribution in the processed-object surface.

[C]onventionally the difficulty was that the resistive-heating-element circuit pattern had to be designed while taking into consideration the position of the lead circuit and of the electrodes, which would not necessarily make the most suitable circuit pattern for temperature uniformity; in the present invention, however, *with the location of the lead circuit and electrodes having no relation to the pattern for the resistive-heating-element circuit, the pattern can be optimized for temperature uniformity*

(emphasis added).

Thus, thanks to a unique inspiration that distinguishes from the alleged motivation to combine the teachings of the references cited under this section of the Office action, Applicants' invention is a non-obvious combination of the features now recited in claims 1 and 15. Claim 7, rejected under this section, depends from a thus non-obvious claim 1.

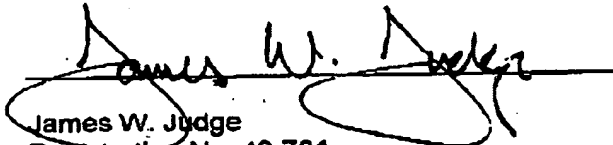
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Moreover, as claims 1 and 15 have been amended to include the electrodes, "formed inside the area in which the resistive heating element is formed," claim 7 has been amended to delete the recitation of the electrodes themselves, leaving the recitation of the limitation on the electrode location, so that the rejection of claim 7 prior to amendment has been rendered moot.

Accordingly, Applicant courteously urges that this application is in condition for allowance. Reconsideration and withdrawal of the rejections is requested. Favorable action by the Examiner at an early date is solicited.

Respectfully submitted,

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